CLAIMS

What is claimed is:

1. A plant comprising a heat source that heats a first portion of a liquefied natural gas, and an expander in which the first portion of the heated liquefied natural gas is expanded to produce work.

2. The plant of claim 1 wherein the heat source comprises a combined cycle power plant.

3. The plant of claim 1 wherein at least a portion of the expanded liquefied gas is fed into a demethanizer to produce a lean gas and a demethanized bottom product.

4. The plant of claim 3 wherein the lean gas is compressed using at least part of the work provided by the expander.

5. The plant of claim 3 wherein the demethanized bottom product is fed to a deethanizer that produces an ethane product and a liquefied petroleum gas product.

6. The plant of claim 5 wherein the ethane product is employed as a fuel in the combined cycle power plant or petrochemical plant feedstock.

7. The plant of claim 5 wherein reflux condenser duty of the deethanizer is provided by refrigeration content of a portion of the liquefied natural gas before the heat source heats the liquefied natural gas.

8. The plant of claim 1 wherein a second portion of the liquefied natural gas is separated in a demethanizer into a lean gas and a demethanized bottom product.

9. The plant of claim 8 wherein the second portion and the first portion have a ratio of between about 0.4 to 0.7.

10. A plant comprising a liquid natural gas feed that is split in a first portion and a second portion, wherein the first portion is heated and expanded before entering a demethanizer, and wherein the second portion is used as reflux for the demethanizer.

11. The plant of claim 10 in which the first portion is expanded in an expander to produce work.

12. The plant of claim 11 wherein the demethanizer produces a lean gas that is compressed to a pipeline pressure using the work provided by the expander.

13. The plant of claim 10 further comprising a deethanizer, and wherein the first portion provides reflux condenser duty for the deethanizer before the first portion is heated and expanded.

14. The plant of claim 13 wherein the demethanizer produces a bottom product that is fed to the deethanizer, and wherein the deethanizer produces a liquefied petroleum gas product and an ethane product.

15. The plant of claim 14 wherein the ethane product is combusted as a turbine fuel in a combined cycle power plant.

16. The plant of claim 10 wherein heating of the first portion is provided by a heat transfer fluid that receives heat from at least one of a gas turbine inlet air stream, a heat recovery unit, and a flue gas stream.

17. A plant comprising a regasification unit operationally coupled to a combined cycle power unit, wherein liquefied natural gas is heated by heat provided from the combined cycle power unit, and wherein a processed liquefied natural gas produced from the heated liquefied natural gas is compressed using power produced by expansion of the heated liquefied natural gas.

18. The plant of claim 17 wherein the regasification unit provides a combustion fuel to the combined cycle power unit, wherein the combustion fuel is prepared from the liquefied natural gas.

19. The plant of claim 17 wherein a demethanizer produces the processed liquefied natural gas.

20. The plant of claim 19 wherein the demethanizer provides a demethanized bottom product to a deethanizer, and wherein the deethanizer provides an ethane product as the combustion fuel.

AMENDED CLAIMS

[received by the International Bureau on 05 February 2004 (05.02.04);
claims 1-20 amended]

What is claimed is:

1. A plant comprising a heat source that is cooled by a refrigeration content of a first portion of a liquefied natural gas and thereby heats the first portion of the liquefied natural gas, and an expander in which the first portion of the heated liquefied natural gas is expanded to produce work.

2. The plant of claim 1 wherein the heat source comprises a combined cycle power plant.

3. The plant of claim 1 wherein at least a portion of the expanded liquefied gas is fed into a demethanizer to produce a lean gas and a demethanized bottom product.

4. The plant of claim 3 wherein the lean gas is compressed using at least part of the work provided by the expander.

5. The plant of claim 3 wherein the demethanized bottom product is fed to a deethanizer that produces an ethane product and a liquefied petroleum gas product.

6. The plant of claim 5 wherein the ethane product is employed as a fuel in the combined cycle power plant or petrochemical plant feedstock.

7. The plant of claim 5 wherein reflux condenser duty of the deethanizer is provided by the refrigeration content of the first portion of the liquefied natural gas before the heat source heats the liquefied natural gas.

8. The plant of claim 1 wherein a second portion of the liquefied natural gas is separated in a demethanizer into a lean gas and a demethanized bottom product.

9. The plant of claim 8 wherein the second portion and the first portion have a ratio of between about 0.4 to 0.7.

10 A plant comprising a liquid natural gas feed that is split in a first portion and a second portion, wherein a refrigeration content of the first portion cools a heat source in the plant to generate a heated first portion, wherein the heated first portion is expanded before entering a demethanizer, and wherein the second portion is used as reflux for the demethanizer.

11 The plant of claim 10 in which the first portion is expanded in an expander to produce work.

12. The plant of claim 11 wherein the demethanizer produces a lean gas that is compressed to a pipeline pressure using the work provided by the expander.

13. The plant of claim 10 further comprising a deethanizer, and wherein the first portion provides reflux condenser duty for the deethanizer before the first portion is heated and expanded.

14. The plant of claim 13 wherein the demethanizer produces a bottom product that is fed to the deethanizer, and wherein the deethanizer produces a liquefied petroleum gas product and an ethane product.

15. The plant of claim 14 wherein the ethane product is combusted as a turbine fuel in a combined cycle power plant.

16. The plant of claim 10 wherein heating of the first portion is provided by a heat transfer fluid that receives heat from at least one of a gas turbine inlet air stream, a heat recovery unit, and a flue gas stream.

17. A plant comprising a regasification unit operationally coupled to a combined cycle power unit, wherein a refrigeration content in liquefied natural gas cools a heat source in the combined cycle power unit to thereby produce a heated liquefied natural gas, and wherein a processed liquefied natural gas produced from the heated liquefied natural gas is compressed using power produced by expansion of the heated liquefied natural gas.

18. The plant of claim 17 wherein the regasification unit provides a combustion fuel to the combined cycle power unit, wherein the combustion fuel is prepared from the liquefied natural gas.

19. The plant of claim 17 wherein a demethanizer produces the processed liquefied natural gas.

20. The plant of claim 19 wherein the demethanizer provides a demethanized bottom product to a deethanizer, and wherein the deethanizer provides an ethane product as the combustion fuel.